

## ***Kawasemyia*, an invalid genus and *Kawasemyiinae*, an invalid subfamily of Trichoceridae (Diptera, Nematocera)**

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Abstract. The monotypic genus *Kawasemyia* ALEXANDER 1952 is found to be invalid. The species *Trichocera imanishii* (TOKUNAGA) on which the genus, and later the subfamily *Kawasemyiinae* ALEXANDER 1969 were founded, is a polymorphic subapterous, high mountainous species, which belongs to the genus *Trichocera*.

Key words: Trichoceridae, *Kawasemyia*, *Trichocera imanishii*.

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Wing venation, antennal morphology, the simple dististyle of the hypopygium and the unique ovipositor shape characterize the adults of the family Trichoceridae. The original description of the species in question, *imanishii* (TOKUNAGA) was based on females and placed in the genus *Alfredia* (TOKUNAGA 1935). It was referred to as a "subapterous trichocerid fly", and published along with two other newly described limoniid species. The genus affiliation later was recognized as wrong by TOKUNAGA and the species subsequently placed in the genus *Trichocera* (TOKUNAGA 1936, 1938). The female types of *imanishii* (TOKUNAGA), kept in alcohol, have not been preserved in the Kyoto collections as stated in the original description. I have evidence (M. TOKUNAGA and Y. HIRASHIMA in litt.) that the material has been placed in the Kyushu University, Entomological Laboratory at Fukuoka. But recent inquiries have not resulted in an answer. ALEXANDER (1952) got additional material of a male and a female from E. KAWASE. In describing the *imanishii* (TOKUNAGA) male, he created a new genus *Kawasemyia* for the species. With further material at hand (ALEXANDER 1956), later elevated the genus to subfamily rank (ALEXANDER 1969). This subfamily, *Kawasemyiinae*, was established on base of the reduced wing venation of the males of *Kawasemyia imanishii* (TOKUNAGA). In their catalogue DAHL & ALEXANDER (1976) distinguished two subfamilies, *Kawasemyiinae* and *Trichocerinae*. Already at that time the authors did express different views on the validity of the subfamily. The links between the East Palearctic and the world fauna

were just realized and the generic position of the species seemed not clear at all. However, with greater knowledge of the recent fauna and with the results on numerous fossils from Asian sites (KRZEMIŃSKI, DAHL, KRZEMIŃSKA in prep.), it becomes clear that this species from mountainous areas of Japan does not justify a separate genus, let alone a subfamily.

The material of the Alexander collection (specimens on slides from E. KAWASE from the type area, and from K. BABA from an adjacent area), now at the National Museum of Natural History, Washington, was studied by me. Here the drawings are given of wings from three males, the hypopygia of two from different localities (one from the type locality, collected by KAWASE), and the ovipositor, antennae and palps of a female (also collected by KAWASE from the type locality). Although this material at present does not qualify as lectotype material, it is the material on which ALEXANDER based his description of the male wing, hypopygium and the genus *Kawasemyia* (ALEXANDER 1952).

The female from the type locality (Fig. 1a-d) corresponds very well with the original description and figures 2-6 in TOKUNAGA (1935) and TORI (1991, Fig. 2). The shape of the ovipositor is similar to that of females found in other Palearctic species of the genus *Trichocera* and belongs to the group distinguished by long ovipositors, as e.g. in the female of *sakagushi* ALEXANDER (ALEXANDER 1930, TOKUNAGA 1938), *limpidipennis* LOEW, or *implicata* DAHL, the latter two also found in mountainous localities in Europe (DAHL & ALEXANDER (1976). The wings and halteres of the additional material are as heavily reduced as those of the types (TOKUNAGA 1935, Figs. 3-4), which establishes the subapterus reduction as morphologically fixed for females. The legs of the females are

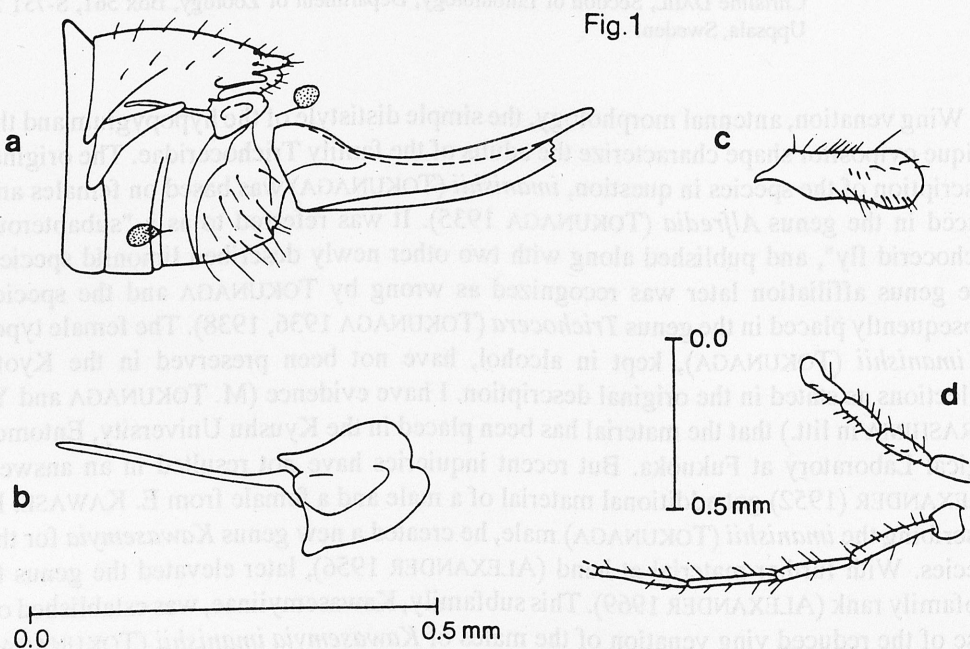


Fig. 1. Ovipositor of *Trichocera imanishii* (TOKUNAGA) from female prep. 57, type locality, coll. KAWASE, det. C. P. ALEXANDER. Abbreviations: a - ovipositor, b - genital plate, c - wing, d - palpus and antenna.

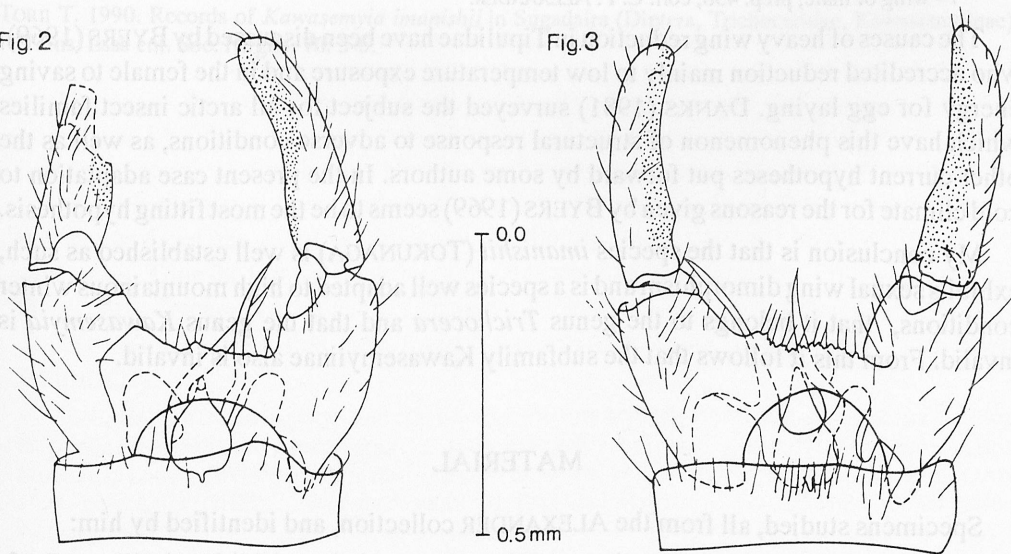
much stouter than in flying females of *Trichocera* species, but the proportions of all tarsi are those of the genus *Trichocera* (DAHL 1971).

The hypopygia (Figs. 2, 3) of the only two males in the Alexander collection show a normal *Trichocera* morphology. They have no special lobes or knobs which could place them in the subgenus *Metatrachocera*. There is a variation in setation between the two hypopygia, which can occur in trichocerids. However, more material is needed for a better analysis of species specificity. The legs are somewhat stouter than in normally winged species, but of *Trichocera* tarsi proportions (DAHL 1971). Wing venation (Figs. 5-7) is of a reduced type and very variable. The example of Fig. 5 (right and left wing from the type locality specimen) demonstrates clearly the breakdown of the wing vein pattern. The left wing of Fig. 5 is not quite identical with that of Fig. 4, presumably the one which ALEXANDER (1952) figured for the genus *Kawasemyia* without further indication of specimen. I suppose it is the wing of which a careful examination of the veins gives the pattern of my Fig. 5. The left wing of this male had been twisted during preparation and a flap of the A area is folded against the lower edge of the wing. The photo of the male given by TORI (1990), who found the species in another mountainous area in Japan, in Sugadeira, also shows reduction of wings and stout legs.

Wing reduction of various stages combined with sexual dimorphism is a feature found in other Tipuloidea living in arctic or mountainous areas (TJEDER 1963). For trichocerids DAHL (1957) found a tendency of variability in vein reduction in arctic specimens of *T. lutea* BECH. Nothing more is known about the ecology of this winter adapted, mountainous species *T. imanishii* from Japan, besides that it has been collected in winter (ALEXANDER 1952) and on snow and the male is unable to fly (TORI 1990).

Fig. 2

Fig. 3



Figs. 2-3. Male hypopygium of *Trichocera imanishii* (TOKUNAGA): 2 - prep. 37, from type locality, coll. KAWASE, det. C. P. ALEXANDER; 3 - prep. 378, from type area, coll. BABA, det. C. P. ALEXANDER.



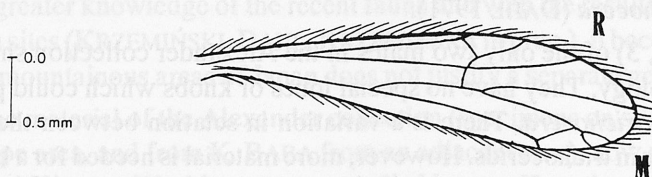


Fig. 4 Wing of male *Kawasemyia imanishii* (Tokunaga) showing general outline and venation.

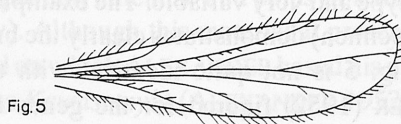
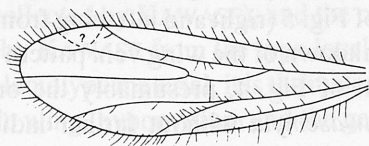


Fig. 5

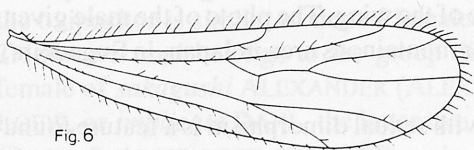


Fig. 6

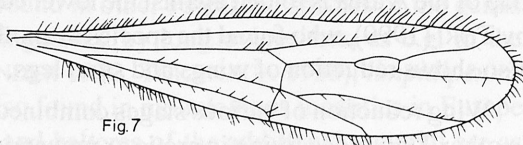


Fig. 7

Figs. 4-7. Wings of *Trichocera imanishii* (TOKUNAGA): 4 - as it was figured by ALEXANDER (1952) for genus *Kawasemyia*; 5 - left and right wing of male, prep. 37 from type locality, coll. KAWASE, det. C. P. ALEXANDER; 6 - wing of male, prep. 378 from type area, coll. BABA, det. C. P. ALEXANDER; 7 - wing of male, prep. 458, coll. C. P. ALEXANDER.

The causes of heavy wing reduction in Tipulidae have been discussed by BYERS (1969), who accredited reduction mainly to low temperature exposure and in the female to saving energy for egg laying. DANKS (1981) surveyed the subject for all arctic insect families which have this phenomenon of structural response to adverse conditions, as well as the other current hypotheses put forward by some authors. In the present case adaptation to cold climate for the reasons given by BYERS (1969) seems to be the most fitting hypothesis.

My conclusion is that the species *imanishii* (TOKUNAGA) is well established as such, exhibits sexual wing dimorphism and is a species well adapted to high mountainous winter conditions, that it belongs to the genus *Trichocera* and that the genus *Kawasemyia* is invalid. From this it follows that the subfamily Kawasemyiinae also is invalid.

## MATERIAL

Specimens studied, all from the ALEXANDER collection, and identified by him:

Males: (one slide, without head, prep. 37) *Kawasemyia imanishii* (Tok) Niigata Pref., Honshui, coll. E. KAWASE; (one slide, without head, prep. 378) *Kawasemyia imanishii* (Tok) Kurokawa-Eschigo, Jan. 8. 1955, coll. Kintaro BABA; wing (one slide) from male prep. nr. 458 (without locality indication).

Female: (one slide, with head, prep. 57) *Kawasemyia imanishii* (Tok) Niigata Pref., Honshu, coll. E. KAWASE.

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